

Itsy Bitsy Spider Challenge



Build the tallest, most stable tower out of the supplies, and then hoist the spider to the top.

Kit contains:

- Plastic spider ring
- Assorted building supplies
- 2 Paper clips
- String

You will need: scratch paper and pencil, scissors, tape, and ruler.



MORTON GROVE PUBLIC LIBRARY

6140 Lincoln Avenue, Morton Grove, IL 60053

Youth Info Desk: 847-929-5102 | mgpl.org

INSTRUCTIONS

Your challenge is to create a tall, stable structure with a pulley-style rig with which to hoist the itsy bitsy spider to the top.

Step 1. Set aside the spider ring, string, and paper clips. Now consider the rest of your materials.

Imagine: How could they be used for building?

Could you fold, cut, tape, or combine them in creative and useful ways?



Step 2. Draw up a plan for your spider's tower using the scratch paper and pencil.

Step 3. Create! You may use the materials from this kit (including the bag!) and tape to build the structure.

Step 4. Attach one paper clip to the top of your tower and one to the bottom. Tie or tape your spider ring to the string. Thread the string →

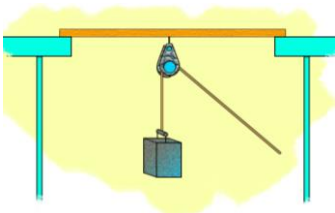
through the two clips. Tie the ends together to make a taut loop. (Leave the extra string for now.)

Step 5. Test! Pull the string to hoist the itsy bitsy spider to the top of the tower. Did it work? If so, measure your tower and record the height.

Step 6. Improve! If your tower was too wobbly, re-engineer your structure to add stability. If your tower was stable, challenge yourself to re-engineer your structure so that it's even taller.



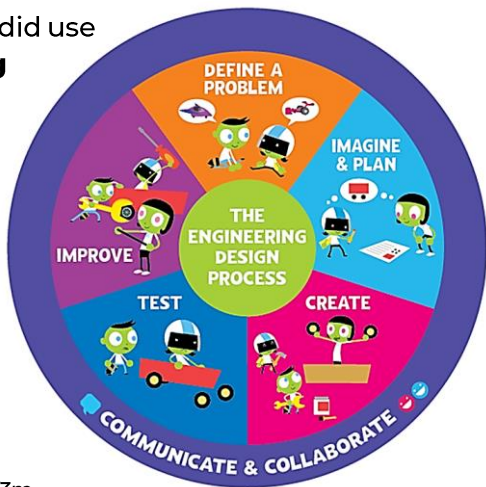
ENGINEERING NOTE: A **pulley** is a simple machine that can be used to lift heavy objects more easily. Pulleys consist of a wheel that rotates on an **axle**—which is a rod through the center of the wheel—and a rope, cable, or chain. Did you build a pulley? No. 😞





The rig you built to raise the spider is useful but NOT a pulley. While it does redirect the force—pull down to make the spider go up—it does not create a **mechanical advantage**. A flagpole, on the other hand, does contain a pulley. The wheel and axle system makes a heavier load lighter.

You did use the **engineering design process** during this challenge. You can use it to improve all of your creative builds!



Sources:

tinyurl.com/2ramwf3m

alaskapublic.org/education/ready-to-learn/ruff-ruffman/ruff-ruffman-virtual-events/